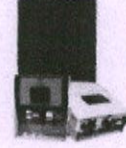


9786769961



- ★ Air Conditioner
- ★ Refrigerator
- ★ Solar PV Panel
- ★ Inverter

Boys HS School Opposite – Thirumayam.

Date: 20.4.23

From

KSP Services,
Boys GHS School Opposite,
Thirumayam – 622 507.

forwarded to
HOD / EEE

To

The Principal,
Sri Bharathi Engineering College for Women,
Kaikkurichi,
Pudukkottai – 622 303.

[Signature]
20/04/23

Respected Madam,

With the previous consultancy services offered by the Department of Electrical and Electronics Engineering in the domain of solar panel estimation and selection is satisfactory. We kindly request the consulting team to reach out to us for carrying out the same.

[Signature]

Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurichi - 622 303, Pudukkottai Dt.

C. Palani Samy



KSP Services, Thirumayam.



SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

Pudukkottai - Aranthangi Road,

Kaikkurichi, Pudukkottai - 622 303.

Date : 26/4/2023

To

KSP Services,

Boys GHS School Opposite,

Thirumayam – 622 507.

Dear Sir/Madam,

Greetings from Sri Bharathi Engineering College for Women!

We are delighted to extend our consultancy activities for identifying the rating of solar PV panel for your clients. Mr. T.Parthiban, Assistant Professor Department of Electrical and Electronics Engineering Sri Bharathi Engineering College for Women is designated to complete the task promptly. The cost for the proposed work estimation is approximately Rs. 3500. We await your favourable response.

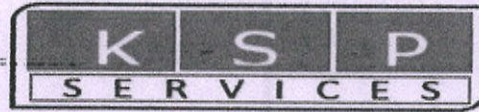
Thanking you

Dr. S. THILAGAVATHI M.E., Ph.D.,
PRINCIPAL
SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
Kaikkurichi - 622 303, Pudukkottai Dt.

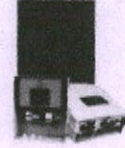
PRINCIPAL

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SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN
KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT

26/04/23



9786769961



- ★ Air Conditioner
- ★ Refrigerator
- ★ Solar PV Panel
- ★ Inverter

Boys HS School Opposite – Thirumayam.

Date: 9.5.2023

From

KSP Services,
Boys GHS School Opposite,
Thirumayam – 622 507.

To

The Principal,
Sri Bharathi Engineering College for women,
Kaikkurichi,
Pudukkottai – 622 303.

Respected Madam,

We are satisfied with your quotation for the estimation of PV panel rating and its quantity for our clients and on negotiation we grant Rs. 3250 towards the consultancy work on submission of the proposed work report within 5 to 7 days.

C. Palani Samy

HOD / EEG

for necessary action
please

9/5/23



Dr. S. THILAGAVATHI M.E., Ph.D.,
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KSP Services, Thirumayam.



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Kaikkurichi, Pudukkottai - 622 303.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CONSULTANCY PROJECT WORK

REPORT

**Estimation of Power Rating and Numbers of Solar PV Panel Require for
Installation in Domestic Appliances**

SUBMITTED

TO

KSP Services,

Boys GHS School Opposite,

Thirumayam – 622 507.

REPORT DATE: 17.5.2023

Dr. S. THILAGAVATHI M.E., Ph.D.,

PRINCIPAL

**SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN**

Kaikkurichi - 622 303, Pudukkottai Dt.

As requested, / Order by KSP Services, Thirumayam dated 9.5.23, the following are the details for your kind perusal.

1. Load estimation

Load	Watts	Hour/Day	Number of loads	Watt-Hr
CFL	20	6	4	480
Tube Light	40	4	2	320
Fan	60	11	2	1320
LED TV (55'')	100	7	1	700
Laptop	40	5	1	200
Total Daily Watt- Hour/day or Wh/day	420			3020

1.a. Load Estimation with power factor of 0.85 approximately.

Load	Watts	Hour/Day	Number of loads	Watt-Hr
CFL	20	6	4	480
Tube Light	40	4	2	320
Fan	60	11	2	1320
LED TV (55'')	100	7	1	700
Laptop	40	5	1	200
Total Daily Watt- Hour/day or Wh/day	494.11			3553

2. Determining the inverter rating:

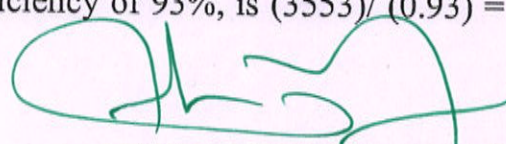
The require energy is supplied from a battery bank through an inverter. The total load that would be connected to the inverter is around 495 [420/0.85] Watt.

Then, the inverters power handling capacity should be around 1000 Watt as available in market.

3. Daily energy supplied to the inverter:

The daily energy consumed by the load is 3553 Wh.

The energy input to the inverter with the efficiency of 93%, is $(3553) / (0.93) = 3820.43$ Wh, approximated to 3821 Wh.



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 Kaikkurchi - 622 303, Pudukkottai Dt.

4. Deciding the system voltage:

1 Battery of 24V can be used to have typical PV system voltage as 24V.

5. Sizing of batteries:

The required charge capacity = $(3821 \text{ Wh}) / (24 \text{ V}) = 159.20 \text{ Ah}$.

The number of batteries of rating 24V, 200 Ah with Depth of Discharge (DOD) of 70% required is $(159.20 \text{ Ah}) / (100 * 0.70) = 2.27$.

6. Sizing of PV modules:

The energy supplied at the input of battery terminal with battery efficiency of 90% is, $(3553 \text{ Wh}) / (0.90) = 3947.77 \text{ Wh}$.

The total Ampere hour to be supplied by PV Panel should be, $3947.77 \text{ Wh} / (24 \text{ V}) = 164.49 \text{ Ah}$.

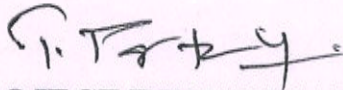
The total amperes from the PV modules, $(165 \text{ Ah}) / (8 \text{ h}) = 20.625 \text{ Ampere}$.

The typical value of voltage and current of 440 W_p module at maximum power point (V_m and I_m) would be about 49 V and 11 A, respectively.

The number of PV modules required is, $20.625 / 11 = 1.875$ Therefore, 2 PV Panels required as per calculation.

Considering various environmental factors and solar efficiency 2 panels of rating 440 W_p is required to deliver Total Daily Watt- Hour/day of 3020.

Sl. No	Description	Rating	Quantity
1.	Inverter	1000 Watt	01
2.	Battery	24V, 200 Ah	02
3.	Solar PV Panel	440 W_p , 49 V / 11 A	02


PROJECT INVESTIGATOR

[P. PARHIBAN, APLEEE]


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Pudukkottai - Aranthangi Road,

Kaikkurichi, Pudukkottai - 622 303.

Date : 17/5/2023

Utilization Certificate

Certified that the amount of rupees Rs.3250 (Three thousand two hundred and fifty only) was sanctioned by KSP Services, Thirumayam during the academic year (2022 - 2023), in favour of Department of Electrical and Electronics Engineering Sri Bharathi Engineering College for Women, Kaikkurichi, Pudukkottai has been fully utilized for Estimation of solar PV Panel requirement. The purpose of amount sanctioned has been fulfilled and delivered as per conditions of grant were satisfied.


PROJECT INVESTIGATOR

[T. PARZIBAN, AIEEE]


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KAIKKURICHI - 622 303.
PUDUKKOTTAI DISTRICT


Dr. S. THILAGAVATHI M.E., Ph.D.,

PRINCIPAL

SRI BHARATHI ENGINEERING
COLLEGE FOR WOMEN

Kaikkurichi - 622 303, Pudukkottai Dt.

Ph: 04322 - 242768 Mobile: 99422 28029, 97509 28029

website : www.sbec.edu.in e-mail : sribharathienggcollege@gmail.com